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USDA FAS FOR OSTA/NTPMB/MHENNEY AND FNAIM
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SUBJECT: READOUT OF MADAGASCAR AND MOZAMBIQUE BIOTECHNOLOGY
OUTREACH EVENTS

REF: A) STATE 160639 B) PRET 000004

¶1. SUMMARY: From August 20 - 27, 2008, Dr. C.S. Prakash, Professor of Plant Molecular Genetics, Tuskegee University, and Dr. Martin Lema, Advisor to the Argentine Ministry of Agriculture and Professor of Biotechnology, Quilmes University, travelled to Madagascar and Mozambique to lead two agricultural biotechnology and biosafety workshops sponsored by the USDA and the Governments of Mozambique and Madagascar. Funding for these workshops came from State/EB (\$10,000) and USDA/FAS (\$38,000). END SUMMARY.

Agriculture in Mozambique and Madagascar

¶2. In Mozambique, agriculture contributes over 25 percent to GDP and over 75 percent of its population relies on agriculture for survival. Due to agriculture's vulnerability to natural disasters (droughts and floods), the agricultural sector growth fell below GDP growth during the late 1990's through present.

¶3. Twice the size of California, Mozambique has approximately 36 million hectares of arable land. Only 12 percent, however, is under cultivation. The agricultural sector is divided between small-holder subsistence farmers, who are responsible for about 94 percent of total agricultural production, and commercial farms, owned mostly by businesses, which are responsible for the remaining 6 percent of agricultural production.

¶4. The commercial farm segment grew approximately 45 percent from 2001 to 2003, with a focus on cultivation of tobacco, cotton, and sugar. From 2002 to 2004 agricultural exports increased approximately 40 percent to \$266 million. Non-agricultural exports during the same period increased approximately 98 percent.

¶5. Mozambique continues to be a net food importer despite its natural resources base. In 2004 agricultural commodity imports totaled approximately \$294 million. Wheat, rice, and vegetable oils (palm and soybean) were the top commodities imported, followed by oranges, corn, and poultry. Agricultural exports, not including forestry and seafood, totaled \$122 million in 2004. Tobacco, cashews, cotton and sugar were the major commodities exported.

¶6. Madagascar's agriculture, including fishing and forestry, is a mainstay of the economy, accounting for more than one-fourth of GDP and employing 80 percent of the population. The estimated GDP growth rate in 2007 is 6.3 percent. Madagascar's major exports include coffee, vanilla, shellfish, sugar, cotton cloth, chromite,

and petroleum products. Madagascar imports capital goods, petroleum, consumer goods, and food. Deforestation and erosion, aggravated by the use of firewood as the primary source of fuel, are serious concerns.

Biotechnology in Madagascar and Mozambique

¶17. Both countries are eager to improve their agricultural productivity and recognize that biotechnology can be a valuable tool to enhance the efficiency of their farming and can help in reducing their dependence on inputs while improving the quality of their food. However, both countries have little or no investment so far in Qfood. However, both countries have little or no investment so far in biotechnology research although some strides have been made with biosafety regulation.

¶18. Due to the potential of the agriculture sector in Mozambique, and the lack of investment/advancement in that sector, the Government of Mozambique made a call for a second green revolution for Mozambique.

One of the tools that will be a leading factor in bringing change and advancement in the agriculture sector in Mozambique will be the promotion and use of biotechnology.

¶19. Madagascar and Mozambique have signed and ratified the Cartagena Protocol on Biosafety, and the Convention on Biological Diversity. They drafted national biosafety frameworks to help guide further development of their biotechnology activities. These regulatory framework efforts were largely due to the presence of a UNEP/GEF program for 18 months that helped prepare the National Biosafety Frameworks "in agreement with the provisions of Cartagena Protocol" and help both countries to ratify the Protocol. Thus, both countries now have regulators with some training and understanding of

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biosafety issues such as assessment of food safety, environmental risk evaluation, LMO detection, etc.

¶10. Identified as a cross-cutting technology in Mozambique's Science, Technology and Innovation Strategy, due to the enormous potential this technology has to impact various sectors of the economy, biotechnology policy development is moving more rapidly in Mozambique than in Madagascar. A National Biosecurity Regulation on Genetically Modified Organisms was published in the GOM official bulletin on April 25, 2007.

¶11. This regulation was formulated by the Inter-Institutional Group on Biosecurity (GIIBS). The GIIBS is tasked to co-ordinate biosafety activities in Mozambique. It is an inter-institutional and multi-disciplinary group with the task of coordinating the process to establish the National Biosafety Framework including the development of biosafety policy, regulatory regime, and administration based on the Cartagena Protocol on Biosafety, which Mozambique ratified in December 2001.

¶12. The Ministry of Science and Technology is the national competent authority and presides over the GIIBS. The GIIBS consists of representatives from each of the following Ministries: Science and Technology, Agriculture, Environment, Health, Industry and Commerce, Fisheries, Planning and Development, and academic and research institutions. Additionally, representatives and specialists from public and private entities may be invited to participate in GIIBS meetings.

¶13. COMMENT: The biosafety policies in both countries appear to be largely risk-averse, and rooted in the 'precautionary principle' and thus more similar to the policies of European countries and that of EU. END COMMENT.

The Workshops

¶14. The USDA/FAS sponsored workshop on agricultural biotechnology which focused on biosafety regulatory development issues in Antananarivo, Madagascar (August 20-21) and Maputo, Mozambique (August 26-27) was timely and opportunistic. The workshop provided

an opening to help further advance biotechnology and biosafety policies in both countries. The meeting featured lectures by two invited experts from overseas, Dr. C. S. Prakash, Tuskegee University, and Dr. Martin Lema, biosafety regulator from Argentina, along with some very high-level policy experts from various local ministries – Science and Technology, Agriculture, Environment, Health, and Trade; along with university scientists and also representatives from CGIAR centers (in Maputo).

¶15. The workshops in both locations were fairly similar in format. The first day of the workshops focused on the basics of biotechnology and GMOS, including an introduction to the global status of food production; historical contribution of science in advancing agricultural production; how biotechnology must be viewed as a continuum of techniques to improve crop varieties; and descriptions of the economic and environmental benefits of crop biotechnology worldwide. The next topic was a description of the U.S.' Coordinated Framework between FDA, EPA, and USDA by Farah Naim, International Trade Specialist, USDA/FAS.
QNaim, International Trade Specialist, USDA/FAS.

¶16. Dr. Lema described how Argentina has successfully employed biotechnology to stimulate its agricultural production over the past 12 years. He provided descriptive examples of various crop applications and documented the economic and environmental benefits of this technology with clear empirical data. Dr. Prakash then provided a series of examples on how biotechnology can conceivably impact developing countries agriculture through pest and disease resistance, improved nutrient efficiency, longer shelf life, enhanced stress tolerance, improved nutrients in the food, and through the development of biofuel crops.

¶17. In Antananarivo Mrs. Chantal Andriananarivo (Ministry of Environment) provided an overview of biotech research and policy in Madagascar. She is in charge of Research and Enhancement of Biodiversity at the National Parks Authority of Madagascar (PNM) which is charged with implementing the Cartagena Protocol. She was

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instrumental in shaping the policy and laws on biosafety, and thus spoke confidently about her country's challenges in implementing the biosafety policy, and in advancing biotechnology research.

¶18. Similarly in Maputo, Dr. Andre da Silva, Legal Advisor, National Council of Sustainable Development, provided a very detailed report on the national biosafety regulation in Mozambique which consists of 27 articles organized into nine chapters and 6 annexes. He described the proposed administrative system for biosafety consisting of single-entry point scheme with four core bodies to coordinate the regulation.

¶19. An important observation made in both workshops by the local regulators was the important need for capacity building to implement the biosafety regulation in their countries. Both local speakers emphasized the need for further training of specialists in food safety, environmental risk assessment, and intellectual property rights issues.

¶20. While Mozambique has some laboratory facilities for "GMO detection" funded by Italian and German governments, such facilities are lacking in Madagascar. Mozambique also has experience with biotech-related controversies and issues as it is a receiving/shipping point for donated corn from the United States for famine stricken-regions in Southern Africa (Zambia, Zimbabwe etc.).

¶21. The second day of the workshop in both locations began with a lecture by Dr. Prakash on the "Scientific facts and myths regarding the safety of GM crops" where he described how regulatory oversight around the world has ensured the safety of biotech products. He described how biotech products are regulated from conception of the idea through field testing and until commercialization, and how stewardship practices help monitor them after deregulation. Additionally, he also described constraints affecting biotechnology application in developing countries such as burdensome regulation,

perceived negative impact of trading partners, influence of the EU, public perception, biased media reports, organized activism, lack of coherent policies, and insufficient support for agricultural research.

¶22. Prof. Lema followed up with an analysis of "International guidance and capacity building for the safety assessment of GM crops" where he talked about various international instruments that govern regulation of GM crops and the transboundary movement of 'Living Modified Organisms' such as Cartagena Protocol on Biosafety.

¶23. The next topic was on the importance of public understanding of issues in biotechnology. Dr. Prakash emphasized how such public acceptance is critical to the integration of biotechnology in agriculture. His talk further identified various communication strategies that scientists and other experts can employ in their outreach efforts to enhance public understanding and acceptance of biotechnology. The final lecture, by Dr. Lema, focused on large global issues such as trade, IPR, genetic resource ownership, and technology transfer issues.

¶24. The final session was an open debate among the participants moderated by Dr. Lema. This session was rather lively as it involved considerable brain storming, question and answers, plus a SWOT-like (Strength, Weaknesses, Opportunities, and Threat) listing based on feedback from the audience. This helped to identify several points of opportunity for further action to help formulate a concrete policy. The workshops in both locations ended with a note of conclusion and words of thanks by the Ag Attache (Rush in Antananarivo, and Rojas in Maputo).

¶25. COMMENT: The workshops in Madagascar and Mozambique were successful as they provided an excellent opportunity to target high level decision-makers in both of these countries who are charged with shaping biotechnology and biosafety policies. The workshop provided insights into the real benefits of this technology to the economies of both countries while helping to identify some of the realistic challenges ahead in implementing them. Hopefully, the lectures also helped bring awareness on the need to evolve a science-based approach to regulating genetically-modified crops and

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food including commercialization of crops and food imports.

¶26. Dr. Lema provided a very credible success story from Argentina on how his country has boldly embraced biotechnology to advance agriculture while reaping substantial benefits without any repercussions in the external trade. Sharing such an experience from another developing country was very illustrative as the audience in both Madagascar and Mozambique could more readily empathize to the situation in Argentina than to the United States.
END COMMENT.

¶27. Both workshops helped foster a genuine dialog among the stakeholders by creating an awareness of the benefits of biotechnology for the Malagasy and Mozambican farmers and highlighted the importance of a viable and practical biosafety regulatory framework. In Maputo, the speakers and USDA representatives also had an opportunity to visit Instituto de Investigacao Agraria de Mocambique (on August 28, 2008) where Dr. Marcos Freire and a visiting professor from Italy (Dr. Mauro M. Colombo, Universita La Sapienza in Rome) gave us a tour of the facilities especially the lab on GMO detection.

A Stop in Pretoria

¶28. During the final leg of the trip, the speakers attended a forum on biotechnology in Pretoria, South Africa sponsored by AfricaBio. Dr. Lema delivered a very descriptive lecture on agbiotech research and commercialization and biosafety regulation issues in Argentina. Dr. Prakash delivered an impromptu lecture on societal resistance to change where he described several instances of historical reluctance to acceptance innovation in various countries. The audience which

consisted of local scientists, graduate student, business and farmer groups participated in a very productive discussion after the lectures.

The Next Steps

¶29. COMMENT: We must continue to foster biotechnology research and education in these countries. Continued outreach and communication programs aimed at providing fact-based information to the regulators and other stakeholders would also help in dispelling many myths and misinformation surrounding the regulation and use of this technology. Existing programs such as the Cochran Fellowship, Norman Borlaug International Fellowship, and Fulbright awards must be used to help scientists, regulators, policy makers, and media persons in these countries to get first-hand experience of biotechnology as it is practiced in the United States, and to help build capacity through training. Translation of key biosafety documents to French and Portuguese would also be very helpful. END COMMENT.